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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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08/29/2001

Philipp Lang

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EXAMINER

LU, TOM Y

ART UNIT

PAPER NUMBER

2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/20/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/942,528

Applicant(s)

LANG, PHILIPP

Examiner

Tom Y. Lu

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 8-10, 12-31 and 48-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-10, 12-31 and 48-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Request for Continued Examination filed on 09/29/2006 has been entered.
2. Upon entry of the Request for Continued Examination, the amendment filed on 09/29/2006 has been entered.
3. Information disclosure statement filed on 09/29/2006 has been considered.
4. Claim 1 has been amended,
5. Claims 5-7, 11 and 32-47 have been cancelled.
6. Claims 1-4, 8-10, 12-31 and 48-55 are pending.

Response to Arguments

7. Upon entry of the amendment, the rejection in the previous office action dated 09/06/2005 has been withdrawn. A new rejection made in view of Jiang et al ("Jiang" hereafter) (U.S. Patent No. 6,442,287 B1) and Wheeler et al ("Wheeler" hereafter) (U.S. Patent No. 5,200,993) is entered below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4, 8-10, 12-31 and 48-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al ("Jiang" hereafter) (U.S. Patent No. 6,442,287 B1) in view of Wheeler et al ("Wheeler" hereafter) (U.S. Patent No. 5,200,993)

- a. As per claim 1, Jiang teaches a method to derive quantitative information (column 3, lines 62-65) from an x-ray image (column 3, line 12) comprising: providing a digitized x-ray image on a local computer (figure 1, steps S10 and S20), wherein the x-ray image includes an image of bone (column 6, lines 27-37); analyzing the x-ray image at a computer, thereby deriving quantitative information on trabecular bone structure from the x-ray image (column 6, lines 38-44; steps S30-S70). Jiang does not explicitly teach the computer is a remote computer in a network environment. Wheeler teaches a host computer 16 and the workstations 12, 14 and 22 are connected in a network environment for sharing of the medical images (see figure 1 and column 4, lines 38-52). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to adapt Wheeler's networking system in Jiang to retrieve medical image data from a host computer and perform image processing at the desired remote computer. One would be motivated to do so because such networking environment increases data handling flexibility and resources while avoiding the requirement for user acquisition of expensive equipment, which may not be compatible with other users as suggested by Wheeler at column 10, lines 2-6.
- b. As per claim 2, the combination of Jiang and Wheeler teaches wherein the analysis of the x-ray image comprises using a computer program on the remote computer (both Jiang and Wheeler teaches use of computer program for image analysis; e.g. column 6, line 6-7 in Jiang).

- c. As per claim 3, the combination of Jiang and Wheeler teaches wherein said quantitative information is densitometric information (see step S41 in Jiang).
- d. As per claim 4, the combination of Jiang and Wheeler teaches wherein said densitometric information is bone mineral density (see step S41 in Jiang).
- e. As per claim 8, the combination of Jiang and Wheeler teaches wherein said quantitative information is information on the morphology of the bone (Jiang: column 3, lines 62-65).
- f. As per claim 9, the combination of Jiang and Wheeler teaches wherein said information on the morphology of a structure is information on the two-dimensional arrangement of individual components forming said structure (Jiang: column 17, lines 21-31).
- g. As per claim 10, the combination of Jiang and Wheeler teaches wherein said information on the morphology of a structure is information on the three-dimensional arrangement of individual components forming said structure (Jiang: column 17, lines 21-31).
- h. As per claim 12, the combination of Jiang and Wheeler teaches wherein said information is selected from the group consisting of trabecular thickness; trabecular spacing; two dimensional or three-dimensional spaces between trabecular; two dimensional or three dimensional architecture of the trabecular network (Jiang: column 17, lines 21-31).
- i. As per claim 13, the combination of Jiang and Wheeler teaches transmitting x-ray acquisition parameters to the remote computer (Jiang: the combination of Jiang

and Wheeler teaches the image process is done on a remote computer, and the image process requires the size of ROI and the spatial resolution, column 9, lines 20-28).

- j. As per claim 14, whether the acquisition parameters transmitted prior to the remote computer prior to, simultaneously or after the x-ray image does not affect the image process, thus it carries no patentable weights. In addition, the applicant does not state transmitting the parameters prior to, simultaneously or after the x-ray image would post any significant advantage or solve any particular problem. Therefore, the examiner herein takes official notice that the combination of Jiang and Wheeler can transmit the parameters prior to, simultaneously or after the x-ray image
- k. As per claim 15, see explanation in claim 14.
- l. As per claim 16, see explanation in claim 14.
- m. As per claim 17, at least two parameters are selected as explained in claim 13.
- n. As per claim 18, the combination of Jiang and Wheeler teaches wherein the X-ray image further comprises one or more internal standards (Jiang: BMD is the claimed "internal standard", column 7, line 10-15).
- o. As per claim 19, the combination of Jiang and Wheeler teaches wherein the internal standard is density of tissue of a human or air surrounding a structure (BMD is bone density).

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- p. As per claim 20, the combination of Jiang and Wheeler teaches wherein the internal standard is density of a tissue and the tissue is selected from the group consisting of subcutaneous, fat, bone and muscle (bone is the selected tissue).
- q. As per claim 21, the combination of Jiang and Wheeler teaches wherein the information is encrypted prior to transmission (Wheeler: column 7, lines 30-31).
- r. As per claim 22, the combination of Jiang and Wheeler teaches generating a diagnostic report based on the quantitative information (Jiang: column 10, tables 1-3).
- s. As per claim 23, the combination of Jiang and Wheeler teaches wherein said diagnostic report provides information on a patient's state of health (tables 1-3 provides information about a patient's bone strength based on the BMD measurements).
- t. As per claim 24, the combination of Jiang and Wheeler teaches wherein the state of health is selected from the group consisting of bone mineral density status and fracture risk (see explanation in claim 23).
- u. As per claim 25, the examiner notes the invention of Jiang shows the relationship between the bone strength and BMD, and by comparing an individual's BMD with the models derived in tables 1-3, the patient's health status is clear. Although Jiang does not explicitly teach generating a bill for determining a patient's bone health, it would have been obvious to a person of ordinary skill in the art that such practice can be integrated to Jiang's system if it is desired. The examiner takes official notice herein.

- v. As per claim 26, see explanation in claim 25.
- w. As per claim 27, the combination of Jiang and Wheeler teaches wherein the x-ray image is an x-ray film (Jiang: the x-ray image is a digitized x-ray film image, column 6, lines 45-47).
- x. As per claim 28, see explanation in claim 27.
- y. As per claim 29, the combination of Jiang and Wheeler teaches wherein the film is digitized using a scanning unit (see figure 3A in Jiang).
- z. As per claim 30, the combination of Jiang and Wheeler teaches wherein said x-ray film image is acquired digitally (the x-ray image in Jiang is acquired digitally through digitization circuit 2000a, column 6, lines 45-47).
- aa. As per claim 31, the combination of Jiang and Wheeler does not explicitly teach the acquisition system is a selenium detector system or a silicon detector system. The examiner takes official notice that either system is suitable for Jiang's system because the kind of acquisition system is irrelevant in Jiang since the novelty of the invention about performing measurements on the output of the acquisition system, a digital image.
- bb. As per claim 48, the combination of Jiang and Wheeler teaches analyzing an x-ray image for osteoporosis (see figure 2A)
- cc. As per claim 49, the examiner notes the combination of Jiang and Wheeler does not explicitly teach providing suitable treatment for a patient's diagnosis. The examiner notes any qualified physician is capable of providing a treatment to the

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patient once the result of the bone analysis is produced by Jiang's system. An official notice is taken here.

dd. As per claim 50, see explanation in claim 49.

ee. As per claim 51, see explanation in claims 8 and 9 above.

ff. As per claim 52, see explanation in claim 3 above.

gg. As per claim 53, see explanation in claim 48.

hh. As per claim 54, see explanation in claim 49.

ii. As per claim 55, see explanation in claim 50.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Grunkin, U.S. Patent No. 6,411,729 B1, see whole document, this patent teaches analyzing trabecular structure of bone on a two-dimensional digital image.

b. Lee et al, U.S. Patent No. 6,377,653 B1, teaches measuring BMD to set up a trabecular index based on the trabecular patterns of a x-ray image.

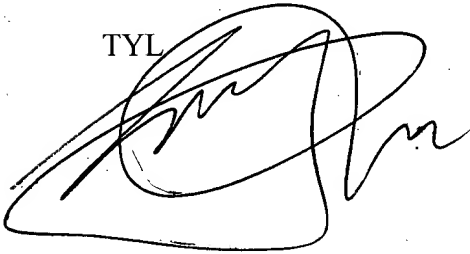
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Y. Lu whose telephone number is (571) 272-7393. The examiner can normally be reached on 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571)-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TYL

A handwritten signature in black ink, consisting of a large, stylized 'S' or 'L' shape followed by a series of loops and a final flourish.